

PATENT SPECIFICATION

(11) 1 484 022

1 484 022

- (21) Application No. 30992/74 (22) Filed 12 July 1974
 (23) Complete Specification filed 14 July 1975
 (44) Complete Specification published 24 Aug. 1977
 (51) INT CL² A01B 29/00
 (52) Index at acceptance A1B 7B 7K
 (72) Inventors ERIC STANFORTH and GEORGE EDWARD HOBBS



(54) ROLLER ARRANGEMENTS FOR LEVELLING SURFACES

(71) We, SISIS EQUIPMENT (MACCLESFIELD) LIMITED, a British Company of Shoresclough Works, Hulley Road, Macclesfield, Cheshire, SK10 2LZ, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention concerns roller arrangements for levelling surfaces.

According to the present invention a roller arrangement for levelling surfaces comprises a frame including rigidly connected side plates, a plurality of rollers journalled by and extending between said side plates, a leading and a trailing roller each being rotatable about a horizontal axis which is fixed relative to said side plates, a centre roller being rotatable about a horizontal axis which is vertically adjustable relative to said side plates, cam means at either side of said frame, pivotable about the axis of said centre roller and operatively associated with abutment means fixed relative to said side plates, means for pivoting said cam means, and means for attaching said frame to the towing linkage of a tractor, the association of said cam means and said abutment means being such that on pivoting the former in one direction the side plates and the leading trailing rollers are elevated relative to the centre roller, and on pivoting it in the other direction the lowermost parts of the peripheries of all three rollers are brought into horizontal alignment.

The invention will now be described further, by way of example only, with reference to the accompanying drawings, in which,

Fig. 1 is a side elevation of a roller arrangement constructed according to the invention;

Fig. 2 is a view from the right-hand side of Fig. 1; and

Fig. 3 is a detail view similar to Fig. 1 but showing the arrangement differently adjusted.

The roller arrangement comprises a frame 10 which supports the rollers, and a cam mechanism, to be described later. The frame 10 is a rigid structure including a pair of parallel side plates 12, 14 and transverse connecting members 16, 18. The member 16 at the leading portion of the arrangement mounts two brackets 20, 22 whilst the member 18 at the trailing end mounts one bracket 24. These brackets form a three-point pivot anchorage for supports 26, 28 and the supports have pins 30, 32, 34 whereby the whole arrangement can be connected to the hydraulic lifting and towing linkage 36 of a tractor. The support 28 has a slot to allow the supports 26 to pivot in brackets 20, 22 yet hold the arrangement in a near horizontal position when lifted on the tractor hydraulic arms.

Between the side plates 12, 14 are carried leading and trailing rollers 38, 40 and centre roller 42. The rollers 38, 40 are of the same diameter, are journalled by their shafts 43, 44 in the side plates 12, 14 and their axes of rotation are horizontal, aligned, and fixed. The roller 42 is of larger diameter and its shaft 46 has its ends located in vertical slots 48 in the respective side plates, so that the horizontal axis of rotation of the roller 42 about its shaft is vertically adjustable relative to the side plates 12, 14.

The ends of the shaft 46 of the roller 42 extend beyond the respective side plates 12, 14 and these carry cam plates 50, 52 one of which has a handle 54. The cam plates 50, 52 each have a cam slot 58 which slots are associated with abutment pins 60, 62 fixedly protruding from the respective side plates 12, 14. The cam plates 50, 52 are pivotable, being fixed to the shaft 46, by means of the handles 54, about the axis of rotation of the centre roller 42, and the centre of curvature of each slot 58, (which extend over 180°) is such that when the cam plates 50, 52 are rotated through this angle, the engagement of the pins 60, 62 in the respective slots 58 causes the position of the side plates 12, 14 to be adjusted vertically relative to the axis of rotation of the centre roller 42. Thus in

BEST AVAILABLE COPY

the one extreme position of the handle 54 (Fig. 1) the rollers 38, 40, 42 have the lower parts of their peripheries in horizontal alignment, whilst in the other extreme position (Fig. 3) the side plates 12, 14, and therefore the rollers 38, 40 are elevated.

Doctor means 64, 66, 68 are provided for the rollers 38, 40, 42.

The invention is not limited to the details of the construction just described. Thus the cam plates could be replaced by pins, and the abutment pins by cam plates.

In use, the roller arrangement may be operated with all three rollers 38, 40, 42 in contact with the ground as shown in Fig. 2, or with the centre roller 42 only in contact with the ground. When levelling surfaces, such as those of hard porous areas formed from specially laid particulate material, it is found that the triple roller is very effective, since the tendency to follow existing surface undulations is much less than in the case of a single roller. However where single roller action is desired the leading and trailing rollers 38, 40 can, in the manner previously described, rapidly be rendered inoperative.

WHAT WE CLAIM IS:—

1. A roller arrangement for levelling surfaces comprising a frame including rigidly connected side plates, a plurality of rollers journaled by and extending between said side plates, a leading and trailing roller each being rotatable about a horizontal axis which is fixed relative to said side plates, a centre roller being rotatable about a horizontal axis which is vertically adjustable relative to said side plates, cam means at either side of said frame pivotable about the axis of said centre roller and operatively associated with abutment means fixed relative to said side plates, means for pivoting said cam means, and means for attaching said frame to the towing linkage of a tractor, the association of said cam means

and said abutment means being such that on pivoting the former in one direction the side plates and the leading and trailing rollers are elevated relative to the centre roller, and on pivoting it in the other direction the lowermost parts of the peripheries of all three rollers are brought into horizontal alignment.

2. A roller arrangement as claimed in Claim 1, in which the cam means includes a curved surface, and the abutment means a pin adapted to run in contact with said curved surface.

3. A roller arrangement as claimed in Claim 1, in which the cam means includes a pin, and the abutment means a curved surface with which the pin is adapted to run in contact.

4. A roller arrangement as claimed in any one of the preceding claims, in which the side plates are connected by members extending transversely therebetween, and further comprising brackets on said members, supports connected to said brackets, and connecting means on said supports so that the arrangement can be connected to the hydraulic lifting and towing-linkage of a tractor.

5. A roller arrangement as claimed in Claim 4, in which the connexion of the support to the brackets is such that when the arrangement is lifted by said linkage it is enabled to retain a substantially horizontal disposition.

6. A roller arrangement for levelling surfaces substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

Agents for the Applicants,
WILSON, GUNN & ELLIS,
Chartered Patent Agents,
-41 Royal Exchange,
Manchester, M2 7DB.

Printed for Her Majesty's Stationery Office by the Courier Press, Leamington Spa, 1977.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

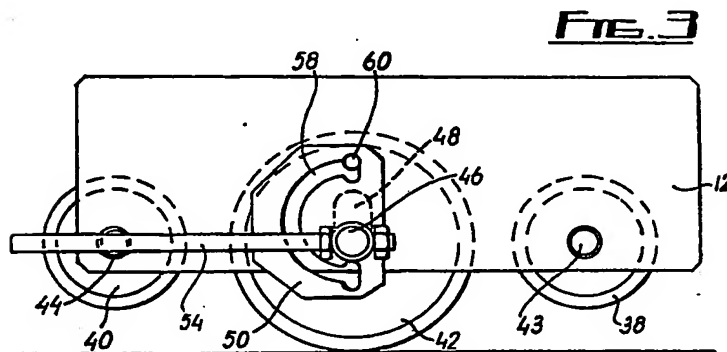
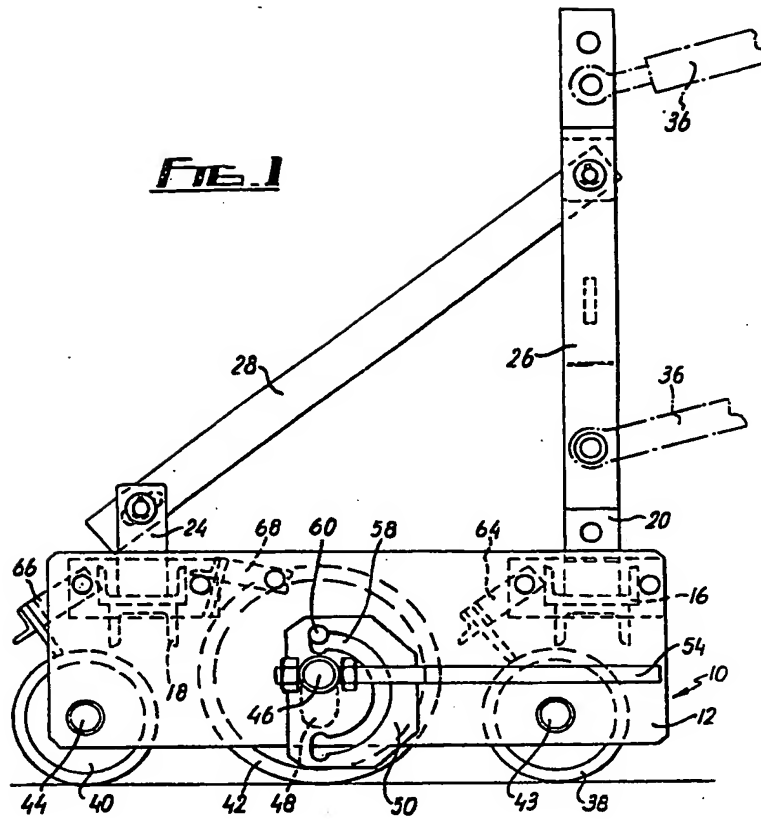
BEST AVAILABLE COPY

1484022

COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale
Sheet 1



BEST AVAILABLE COPY

1484022

COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of
the Original on a reduced scale

Sheet 2

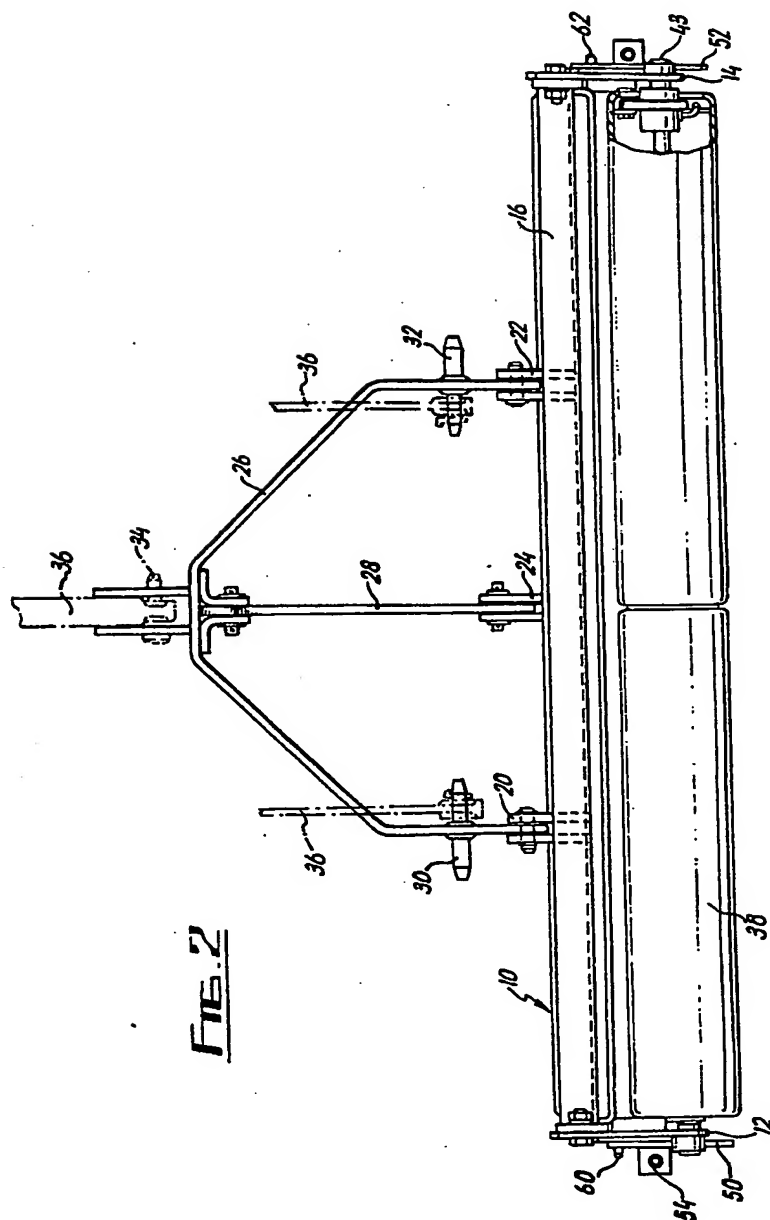


FIG. 2

BEST AVAILABLE COPY